

MULTI-PURPOSE INTEGRITY OF CADASTRE

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Abstract: *Cadastre, as a social process, experienced important profound and multilateral progresses. In this context, the slogan about the fact that „a modern and developed economy can't exist in the country without a modern and developed cadastre” is very widespread.*

Cadastral process comprises other various processes such as „GIS Information System”, real estate valuation and protection of scarce natural resources in terms of rapid population growth. Each of the mentioned social processes has its own tendency of integrity. Therefore, in these circumstances, the role of cadastre in the integrity of multiple processes becomes even more important.

This study includes an analysis focused on the historical development of cadastral process viewed through the prism of multi-purpose integrity. Obviously, the dimensional analysis in time and space is limited. The main issues targeted by the author were the integrity and multi-purpose aspect of the cadastral process.

The conclusions of this study point out the necessity of determining the components of these various processes for drafting the content of both current and future cadastre.

Keywords: *Integrity, multi-purpose cadastre, registration, protection of rights, evaluation, protection of scarce natural resources.*

1. Social and economic importance of cadastre

1.1 Conceptual aspect

Cadastre is one of the oldest social and economic processes. In this context, it is inevitable to meet a diversity of cadastral development directions in different countries and at different historical stages. Due to its multilateral effect, as a process, cadastre allows the implementation of different models that are little recognized as such, for example, the cadastre of United Kingdom (England, UK) with its peculiarities regarding land tenure and the one existing in the continental Europe.

The impact of cadastre on country's economic development is recognized by the above mentioned slogan: „a modern and developed economy can't exist in the country without a modern and developed cadastre”. In its turn, modern economy has a social and ecological content.

Knowing the content of cadastral process, its role in the protection of rights, economic development and protection of scarce natural resources, then its interaction with other social and economic processes and its future development prospects can have a positive impact on the social, economic and ecological balance.

1.2 Theme and object of study

This study is devoted to an important segment of the modern economy – *multi-purpose integrity* of modern cadastre.

The period of study is limited by the implemented available scientific sources and it is oriented towards the period of emergence of cadastre as a whole process. However, when determining the period of study, the author took into consideration the fact that cadastre was implemented in different countries according to the specific conditions of that period. Obviously, a particular attention in this study was paid to the peculiarities of cadastre implementation in the Republic of Moldova.

Given the mentioned theme „multi-purpose integrity of cadastre”, real estate and mainly land constituted the object of this study, which was viewed through the prism of social and economic relations and protection of scarce natural resources.

During the performed investigations, the author has analyzed several sources of scientific information from different countries on different historical periods. In order to make an effective analysis, the author decided to select the most widespread and common comparable criteria, and namely:

- protection of property rights over land;
- process of land measurement within cadastre;
- role of real estate registration as part of cadastre;
- fiscal policy depending on the land registration and valuation;
- role of cadastre in the protection of scarce natural resources.

From the very beginning, we should mention that regardless of the objective necessity of cadastral process emergence, specific conditions greatly influenced its content creating different models that also require to be studied thoroughly formulating therewith the necessary conclusions.

Having a major influence on the social and economic relations, cadastre increasingly becomes the subject of many discussions within the EU and worldwide with the purpose of formulating common principles between countries even being in different conditions.

1.3. The aim of the study, used materials and implemented methods

In light of the selected theme, this study is also important because of the fact that since 2000 Moldova is implementing a real estate cadastre in terms of market economy relations. Obviously, our country lacks its own efficient experience to implement and maintain a cadastre. In this context, analyzing the experience of other countries is of great importance in order to select the appropriate direction of development.

The analysis of the historical development of cadastre in other countries proves that, due to its objective need, cadastre does not depend on the political aspect. The experience of the Republic of Moldova shows that the political aspect can reduce the implementation of cadastre but it can't stop it.

The purpose of the study is to determine the model of real estate cadastre implemented in the Republic of Moldova as well as the sequence of implementing its components: protection of rights, massive valuation for tax purposes, economic development, protection of scarce natural resources etc.

It is well known the role of land measurements in the implementation of cadastre including modern GIS technologies, as well as the role of training the future teaching staff who will serve the process at the required level.

Obviously, it is impossible to mention all the features of cadastre implementation in different countries within this study. Therefore, the author will focus on those strategic peculiarities that are applicable in Moldova.

Also, the aim of the study is to determine general trends with conceptual content which, in most cases, are not appreciated, especially those under the EU's interest as a result of Moldova's European vector. In this context, one objective of the study is to highlight some problems which, even at this stage, are left without a definitive answer, such as:

- what will be the fiscal policy of the Republic of Moldova and how will it influence the content of cadastre?
- to which extent the cadastre will influence the protection of scarce natural resources including state's policy in this area?
- to which extent the multi-purpose aspect of Moldova's cadastre will keep its integrity?

It was already stated that the period of study is relatively long fact enabling us to use successfully the historical analysis method of development trends of the real estate cadastre.

Obviously, when analyzing the trends, a particular interest was given to the similar information regarding the implementation of cadastre in other countries including EU member states.

In this context, the following informative materials were used:

- scientific studies of local and foreign authors;
- annual and periodic information from EU countries in the field of cadastre;
- yearbooks of the Agency of Land Relations and Cadastre and Real Estate Register of the State Enterprise „Cadastre”;
- annual and periodic information of the National Bureau of Statistics of the Republic of Moldova and other EU countries;
- other information and scientific studies on the implementation of real estate cadastre in the Republic of Moldova and other countries.

In this study, the author implemented several methods of scientific research. The most important are the following methods: analysis of statistical data, graphical analysis of trends, systemic analysis of processes (phenomena) development, analysis and synthesis, analysis of historical development of processes and phenomena etc.

2. The process of cadastre estimation

Cadastre represents a very long social process, in which, a lot of events and actions relating to the protection of real estate rights, economic development, protection of scarce natural resources etc. take place. The Republic of Moldova, in its historical development, has passed through different periods of cadastre implementation. The beginning of the XVIIIth century can be identified as the beginning of cadastre development based on private ownership. Since 1940, cadastre experienced state's monopoly on land tenure and since 1990, we turned back again to the development of cadastre in terms of private ownership of land or of real estate as a whole.

This social cascade inevitably influenced the social development in the area which belongs at present to the Republic of Moldova. However, in light of the study, the analysis of historical development of cadastre in the mentioned period, compared with the ongoing development of cadastre in other countries, enables the author to formulate some important and maybe conceptual conclusions regarding the content of cadastre and its prospects.

It is important to note that the historical development of cadastre also experiences the development of such concepts as real estate, the content of cadastral information as well as the aim of cadastre as a whole. This fact proves, first of all, that cadastre represents a process in development but not in regression.

2.1 Description of the study

The importance of cadastre for social and economic development is also valid and actual for the development of Moldova which is at the very beginning. It is especially important for this beginning to be adequate, based on checked arguments. Obviously, cadastre is not the only condition for the development of a country, but it is an important one. In this context, the author emphasized a few issues in the study, one of which is the following „determining the objective necessity of cadastre emergence as a social and economic process”. It is a question that will produce other questions during its development.

Being a set of actions determined by the objective necessity of society, the cadastral process has existed for a long period of time. Various sources of information prove that the oldest activities related to cadastre were discovered in Egyptian writings. According to these writings, long ago B.C., in Egypt, empowered people worked in this field in pharaohs' chancelleries making registrations and measurements aimed at establishing the new boundaries, re-establishing the old borders and rational use of land. During these measurements, they carried out very detailed records about land resources, borders, surface, owners [3] etc.

Other authors insist to establish the beginning of cadastral process much earlier, as it comes from other civilizations of Mesopotamia, and namely from the population of the ancient land Sumer.

There is archaeological evidence that proves that the Cypriots, already in the 6th millennium (B.C.), practiced a common agriculture and since the 1400s (B.C.) the idea of individual property was developed [2].

In this study, the author wasn't necessarily focused on the issue who applied first the cadastre in solving the social problems of Egyptian or Mesopotamian civilization, but on the objective necessity that inevitably required this activity.

In this context, the scenario of the study will be developed according to the following stages:

- analysis of cadastre development in different countries;
- selecting the objective reasons that inevitably determined the initiation of the process;
- determining the content of the first cadastral actions;
- analyzing the evolution in cadastre development;
- formulating the content and purpose of cadastre;
- determining the integrity and multi-purpose aspect of modern cadastre.

Land tenure – a factor influencing the emergence of the cadastral process

Cadastre formation as a process based on an objective necessity can be traced along with the emergence of the state or of the civilization as a whole. The state and private property are two social categories, two mandatory prerequisites for the beginning of the cadastral process.

The ownership, requires, first of all, to be known both by the owner and neighbours. The process of land measurement plays an important role in determining and knowing the

property. The need for land measurements determined their goal – to know the dimensions (size) of land.

In order to formulate an answer to this question, a long period of development of this process is available for us, since the ancient times.

The link between ownership and measurements is explained in the Egyptian writings.

What can be concluded considering the above mentioned facts? First of all, we may conclude that the first actions, which can be classified as cadastral activities, are land measurements aimed at identifying the size and spatial location of the land tenure. Another conclusion is that the objective necessity that we seek to argue the beginning of cadastral activity is represented by the land tenure as a social category.

The emergence of land tenure inevitably requires to carry out land measurements with the purpose to identify and protect land rights.

Registration – a method of property rights protection

We can admit that the registration of land tenure was first implemented by the Egyptians [3]. In author's opinion, the Egyptians, through the process of land registration, gave to cadastre a public content (interest). The public interest is manifested by the development of a fiscal policy, regardless of the form and content of tax levies [1].

Based on the already mentioned facts we can formulate the content of the first cadastral activities and namely:

- land measurements aimed at land tenure identification;
- land tenure registration in order to protect land rights and to form the fiscal policy.

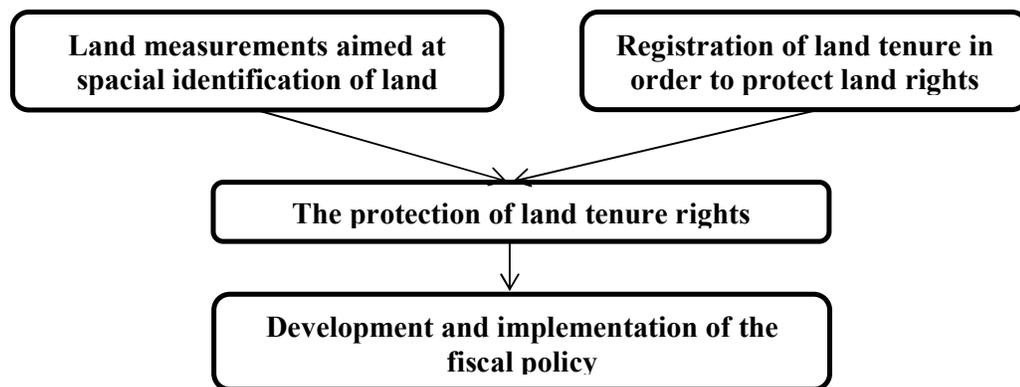


Figure 1. The content of cadastre at its initial stage.

Source: Elaborated by the author based on the analysis of scientific literature

Information about real estate – the aim of cadastre

Based on the above mentioned facts we can conclude that the main purpose of cadastre is accumulating, analyzing and disseminating information about the real estate – “informatization”. This purpose of cadastre will be developed throughout time.

Analyzing the cadastres of other countries [4,7] we found out that over the centuries land tenure registration in order to protect land tenure rights and fiscal policy have not always been accepted by landowners. In many countries, the intent to conceal the real information

about property for tax evasion was a practice and an obstacle in the implementation of cadastre.

However, namely the cadastre was recognized as a method and source for obtaining accurate information. Tax evasion by falsifying information about land can be found in several countries.

This contradiction created special peculiarities in the process of cadastre implementation and namely:

- some countries have accepted the registration process as an objective necessity in the development of economy and have chosen the way of “mandatory registration”;
- other countries have not been able to overcome this contradiction and have accepted the process of real estate registration just as an initiative of the owner.

A stimulus for the development of the registration process was also offered by the development of capitalism in Europe. Fiscal policy based on land registration was the following source of cadastre development. The first countries that have developed their fiscal policy within cadastre and initiated a new beginning of modern cadastre were France and Austria [5.6].

Cadastre – an important factor for economic development

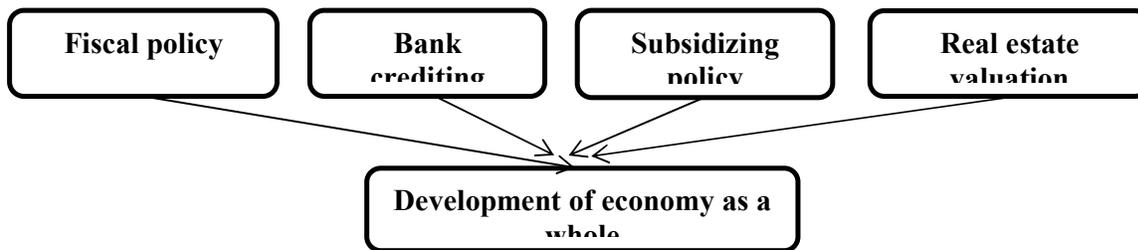
The period of capitalism in society’s development has imposed new conditions of development. First of all, the capitalism is manifested by the transfer of capital. Contrary to the previous period, capitalism is developing where there is capital growth. This factor has given rise to several new economic policies: fiscal, bank crediting, subsidizing etc.

The development of these policies, in their turn, has developed (initiated) a new process - real estate valuation. This process allowed the implementation of fiscal policy based on the market value of real estate, the implementation of the new bank crediting policy based on pledge (again on the real estate value), the implementation of the subsidizing policy for the prospective areas etc.

All new policies can be implemented only in conditions of land registration and protection of the land tenure rights. In other words, economic development along with the protection of the land tenure rights has become a new component of cadastre.

Here, it would be appropriate to formulate a question.

Would the emergence of the above mentioned economic component have been possible within cadastre without the protection of the land tenure rights? We can state that these two components are inter closely related - integrity.



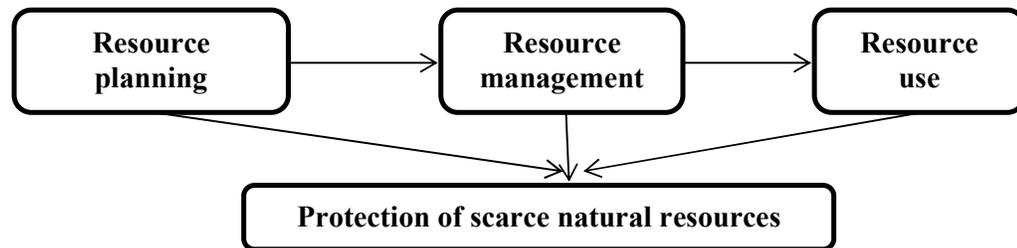
*Figure 2. The economic component of cadastre
Source: Elaborated by the author based on the scientific literature*

Sustainability of economy.

The economic development, implementation of advanced methodologies, massive involvement in existing processes including the natural ones generate new problems based on information and cadastre – first of all. Today the society doesn't agree with the slogan "more production and more income at all costs". The policy of scarce natural resource protection in terms of rapid population growth has become the mainstay of **the sustainable economy**.

The economic development can't be achieved without a balanced planning, appropriate management and rational use of natural resources. The policy of sustainable economy is evaluated through these three important elements which again are based on truthful information about natural resources.

Planning, management and rational use of resources became a new stage of the economic development, a component in the process of informatization of cadastre.



*Figure 3. Planning, management and use of scarce natural resources
Source: Elaborated by the author based on the analysis of scientific literature*

The problem of natural resource scarcity is present throughout the globe, but the most advanced practical solution can be found in the Nordic countries [8,9]. We can see a new stage and a new component in the development of modern cadastre.

Obviously, this component can be achieved only due to the existence of detailed and truthful information by performing land measurements, monitoring and evaluating natural resources in terms of planning, management and rational use.

3. Integrity of modern cadastre

In the context of the facts already described by the author, we can conclude that, at present, the content of cadastral process includes the following purposes:

- protection of property rights;
- sustainable economic development;
- protection of scarce natural resources.

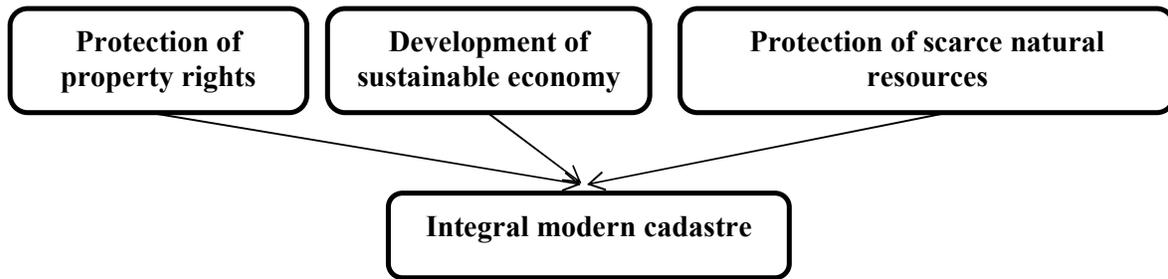


Figure 4. Integrity of cadastre

Source: Elaborated by the author based on the analysis of scientific literature

What does the integrity of cadastre consist of at present? First of all, it consists in the mutual complementarity of its related parts. For example: at the initial stage of cadastre, land measurements persist in all the components of cadastre, beginning with the protection of land rights and ending with the planning, management and use of land (natural resources). Second, the lack of a component affects the achievement and content of others.

The integrity of cadastre is manifesting recently in territorial aspect. More and more countries tend to hold the cadastre based on common principles. The need for keeping a cadastre within the boundaries of a country is axiomatic. Keeping several cadastres based on different concepts within a country is even harmful.

Attempts to separate the economic and juridical information from the integral content of cadastre were made in many countries. Their experience proves that such a separation has ultimately a negative impact on all the components of cadastre.

Overcoming such a situation was found by many countries in the centralization of information flows: Great Britain (United Kingdom) can serve as example, despite the fact that many authors consider that there is no cadastre in England [4].

Centralization of information flows and free access of consumers to information will be a way of cadastre development in the future.

4. Multi-purpose aspect of cadastre

The multi-purpose aspect of modern cadastre was already drawn in Bogor Declaration (UN Conference 1996) and it includes the development of modern informational infrastructures designed for real estate market facilitation, protection of land rights, sustainable development, land management, etc. [10].

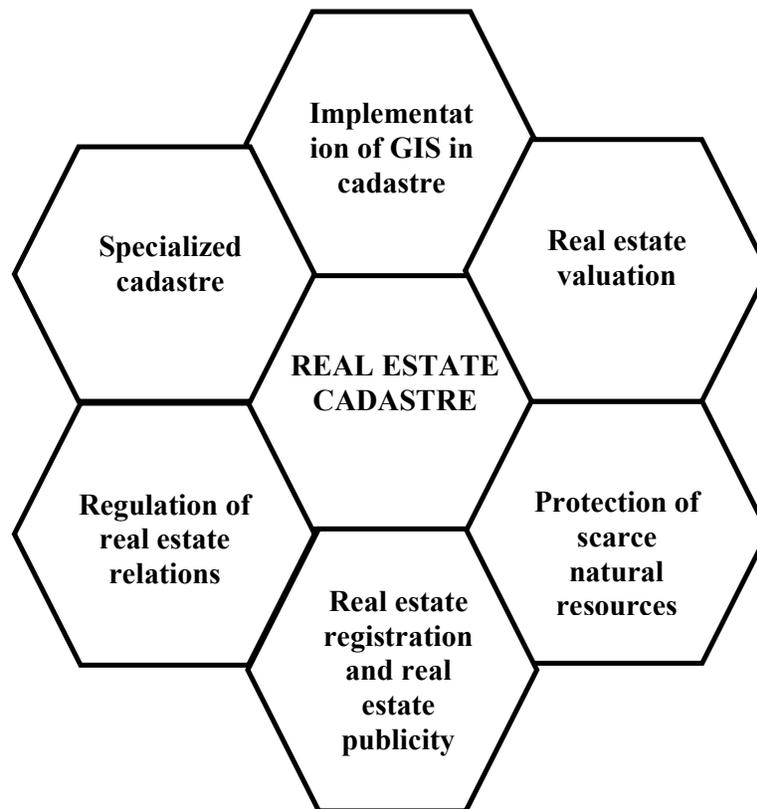


Figure 5. The multi-purpose aspect of cadastre

Source: Prof. Stig Enemark, Prof. Hans Sevatald. Cadastres, Land Information Systems and Planning. UN Conference, FIG, Australia, Melbourne, October 25 – 27, 1999.

It is impossible to implement a multi-purpose cadastre without knowing, without fully understanding the social, economic, legal, cultural system of the environment where it should be implemented.

The key areas covered by the infrastructure (multi-purpose) of cadastre are the following:

- Implementation of GIS methodologies in cadastre;
- Implementation of real estate valuation methods;
- protection of scarce natural resources;
- real estate registration and real estate publicity;
- regulation of real estate relations.
- specialized cadastres.

The success of a modern cadastral system represents a function (the final result) of these many interrelated processes depending on how well these social and economic objectives are addressed.

Even if current cadastral systems are clearly focused on the user, it should be noted that in a country there can be only one cadastral system and only one cadastral map in order to ensure the basic infrastructure.

This means that the cadastral system, because of its multi-purpose aspect, can't be determined only by a single user.

The cadastral system aims at providing information to all users. Users' requirements for cadastral products should be considered carefully.

In order to take into consideration this global goal and also for land management purposes, the cadastral system must be able to include all kinds of information (textual or space information, regardless of scale etc.).

5. Cadastre of the Republic of Moldova

Based on the concept regarding the role of cadastre in protecting land tenure rights we can mention that, on the territory of the Republic of Moldova, cadastral activities were conducted with the emergence (development) of civilization. Some authors don't exclude the fact that cadastral activities have already been done during Dacians' period. This fact could be proved by the existence of borders as an element of rights' dissemination including property rights. This conclusion is rather intuitive as it is based on the logics of the property rights and unfortunately, there are no any arguments to support it.

A negative impact on the cadastral process, confirmed by the experience of other countries, consisted in the fact that Moldova's territory was under occupation for a long period of time.

Property rights argued by legal documents in order to protect them are known since the XIIIth-XIVth century.

Massive cadastral activities in the area of the Republic of Moldova were made as a result of social troubles, already in the nineteenth century, through land reforms. In Moldova, these activities were (are) known as “Reform of the King Charles 1”. The purpose of cadastral activities aimed at establishing and protecting land tenure rights.

Since 1940, Moldova's territory was again subjected to social troubles: the Soviet occupation, world war, and again Soviet occupation. This period has a specific content that manifested itself in history by liquidating land ownership and establishing state monopoly over ownership. This period lasted until 1990 (92).

Beginning with 1992, the Republic of Moldova has returned to private ownership of land and to market land relations. A new period of land cadastre implementation began, in which land measurements had again the function of identifying land tenure rights and along with the registration process - the protection of private property rights.

Being viewed through the prism of the whole cadastral process, in the Republic of Moldova, the cadastre has fulfilled a significant volume of land measurements and registration of land rights. There were created favourable conditions for economic development.

The fiscal policy is at a crossroads. Taking into consideration the fact that the registration of real estate rights in the Republic of Moldova has become an obligation, we can expect to have a further fiscal policy where the taxation of real estate at its market value will prevail. It should be mentioned that, in order to achieve this, it is necessary to develop the process of massive valuation for different categories of real estate at market value.

An important drawback of Moldova's cadastre consists in the lack of scarce natural resource protection. Over the last 20 years and even more, there hasn't been developed any project in Moldova regarding territory zoning, land planning, land management or land use.

In this context, it is necessary to mention the important role of this component of cadastre for the Republic of Moldova. Moldova is situated in the zone of environmental risk:

scarce water resources and danger of erosion processes accompanied by high population density.

Regardless of the current situation, when country's population decreases because of the errors made in carrying out reforms through migration to other countries, the problem remains acute. The actuality of the problem can be already seen in larger cities (Chisinau, Balti, Cahul) where the constructions take place without a substantiated conception in a chaotic and even abusive way.

These unorganized activities will have a negative impact in the implementation of the policy preserving scarce natural resources.

6. Conclusions

1. The objective necessity of cadastral process development is due to the emergence of the property rights as a social category with the purpose of their protection. Land measurements as an element of cadastre aimed at spatial identification of the land rights and the object of these rights – the land.

2. Land (real estate) registration as an element (component) of cadastre has impact on the future fiscal policy. Mandatory registration represents a condition of the fiscal policy based on the taxation of real estate at market value. In the absence of mandatory registration, the fiscal policy will be based on the income taxation.

3. Regardless of the implemented fiscal policies, the current economy requires extensive information about the real estate in order to transport capital. The necessary information can be obtained only from a developed and modern cadastre.

4. The analysis of historical development proves that cadastral process exceeded three stages and continues to grow:

- the first stage - land measurements, registration of the object and protection of rights;
- the second stage - implementation of new policies: fiscal, bank crediting, subsidizing and ultimately the economic development;
- the third stage – planning, management, use and protection of scarce natural resources.

5. At present, the content of cadastre is based on the protection of land rights, economic development and protection of scarce natural resources. The interaction between these three elements of content represents *the integrity of modern cadastre*. Integrity means indivisibility.

6. *The multi-purpose aspect* of cadastre refers to the possibility of cadastral information to be used in various economic and social fields. An important role in the multi-purpose aspect is played by the development of specialized cadastres.

7. In the Republic of Moldova, it is necessary to return to the policy of planning, management and rational use of the scarce natural resources when country's population will inevitably return to a state of growth.

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